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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/759,863

01/16/2004

Chien-Ping Huang

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8429

7590

03/30/2005

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EXAMINER

CHERVINSKY, BORIS LEO

ART UNIT

PAPER NUMBER

2835

DATE MAILED: 03/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/759,863

Applicant(s)

HUANG ET AL

Examiner

Boris L. Chervinsky

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-7,10,13 and 17-20 is/are rejected.
- 7) ☒ Claim(s) 3,4,8,9,11,12 and 14-16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1, 2, 5, 6, 7, 10, 17, 19 are rejected under 35 U.S.C. 102(a) as being anticipated by Carden et al.

Carden discloses a semiconductor package 20 having a heat dissipating structure, comprising: a substrate 52 having a first surface and a second surface opposite to the first surface; at least one chip 42 mounted on the first surface of the substrate 52 and electrically connected to the substrate; a heat dissipating structure comprising a first heat sink 21 and at least one second heat sink 32, wherein the first heat sink 21 has at least one first positioning portion 23, and the second heat sink 32 has at least one second positioning portion 34, 36 and at least one hollow portion, and wherein the second heat sink 32 is mounted on the first surface of the substrate 52, and the first positioning portion 23 of the first heat sink is mounted on the second positioning portion 34, 36 of the second heat sink 30, 32, allowing the chip to be accommodated in a space defined by the first heat sink, the hollow portion of the second heat sink and the substrate; and a plurality of solder balls 54 mounted on the second surface of the substrate; the first and second heat sinks are each shaped as a plate; the first and second positioning portions are respectively formed at peripheral regions of the first and

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second heat sinks; the surface of the first heat sink 21 is larger than that one of the second heat sink 32; the peripheries of the first heat sink 21 and the second heat sink 32 are aligned with each other or arranged in a stagger manner (see Fig. 4); the chip 42 is electrically connected to the first surface of the substrate 52 via plurality of solder bumps (not numbered); a thermal paste 74 adhere the first heat sink 21 and the chip 42.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carden et al. in view of Jung et al.

Carden discloses the claimed invention except the cooling fan mounted on the first heat sink. Jung discloses the device having the fan on the top heat sink portion. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to place the fan as disclosed by Jung in the structure disclosed by Carden for better heat dissipation.

5. Claims 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carden et al. in view of the prior art disclosed in the instant application.

Carden discloses the claimed invention except the insulation material placed around the solder bumps and adhesive material filled between the second heat sink and the first surface of the substrate. The prior art of Fig. 17, 19-23 of the instant application

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discloses the insulation material applied around the solder bumps and the adhesive material filled between the second heat sink and the first surface of the substrate. for electrical insulation and mechanical protection of the solder connection. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to protect solder bumps as disclosed in the prior art shown in the instant application for the device disclosed by Carden et al.

***Allowable Subject Matter***

6. Claims 3, 4, 8, 9, 11,12, 14-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Boris L. Chervinsky whose telephone number is 571-272-2039. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild can be reached on 571-272-2800 ext. 35. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**BORIS CHERVINSKY**  
**PRIMARY EXAMINER**

*Boris L. Chervinsky*  
*3/23/5*